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Application of Multiple Intelligences Teaching Approach in Classroom Instruction Based on POMAT Model

Suriati, S. and Tajularipin, S.*

Faculty of Educational Studies, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia

ABSTRACT

Instructional practices, particularly in Malaysian secondary schools, have undergone tremendous transformation in order to achieve Vision 2020. Part of it is the use of various teaching approaches in classroom instruction as an effort to help the students comprehend the curriculum content better. One of the major teaching approaches which is widely used in Malaysian secondary schools is Multiple Intelligences Teaching Approach or collectively known as MITA. Hence, a qualitative research was conducted to look at teachers' instructional practices in employing multiple intelligences in classroom instruction. Research subjects were six English teachers who serve as informants. Data were collected from classroom observations, semi-structured in-depth interviews and document analysis. Classroom observations were conducted to record the actual classroom instruction that took place in English reading comprehension classrooms while semi-structured in-depth interviews were administered to obtain precise information from the informants. Raw data were recorded and transcribed manually. Later, the data were analysed interpretively and descriptively based on the themes that emerged from research findings. Meanwhile, triangulating data was done to ascertain the validity and reliability of the findings. The study unveiled the application of multiple intelligences teaching approach in classroom instruction at some secondary schools in Pahang based on the POMAT model. Important aspects being explored included the application of multiple intelligences in instructional procedure, instructional objective, instructional material, classroom assessment and instructional technology.

Keywords: Multiple intelligences, multiple intelligences teaching approach, classroom instruction, POMAT

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E-mail addresses:
sulaimansuriati@yahoo.com (Suriati, S.),
tajulas@putra.upm.edu.my (Tajularipin, S.)
* Corresponding author

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INTRODUCTION

Many initiatives have been taken to transform Malaysian education system, in line with and in support of the nation's effort to fulfil Vision 2020. The Vision aims for fostering a technologically literate, critically thinking work force prepared to fully participate in the global economy of the 21st century (Ministry of Education, 1997). At the same time, Malaysian National Philosophy of Education calls for developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious (Curriculum Development Division, 2001b). According to *The Malaysian Smart School: A Conceptual Blueprint* (Ministry of Education, 1997), in order to develop such students, teachers need to individualize education, approach curriculum content through multiple entry points and integrate technology into classroom instruction.

Thus, in order to meet the needs of individualizing education, approaching curriculum content through multiple entry points and integrating technology into classroom instruction, teachers may apply multiple intelligences teaching approach, which is collectively known as MITA in classroom instruction. In fact, Gardner's theory of multiple intelligences validates what teachers have already done in the classroom though most of the time teachers intuitively cater different intelligences in classroom instruction or without even knowing that they are applying multiple intelligences teaching approach (Mckenzie, 2005). In other words, multiple intelligences teaching approach is applicable to any English classrooms even though some of the English teachers may have limited knowledge and exposure to it.

A solution to designing instructional procedure, objective, material, assessment and technology in accordance with multiple intelligences teaching approach is the POMAT model developed by Mckenzie (2005). The model recognizes five critical components of a lesson, namely instructional procedure, objective, material, assessment, and technology, without which the lesson will be incomplete and the classroom instruction will be meaningless. The acronym POMAT itself stands for procedure (P), objective (O), material (M), assessment (A), and technology (T).

PROBLEM STATEMENT

At present, most classrooms are full of students who differ from each other in many ways (Currie, 2003). In fact, they come from different social, economic and cultural backgrounds. Each one of them has different areas of interest, different ways of expressing him or herself, and different strengths and weaknesses. All of these factors can affect the students' learning ability (Currie, 2003). In fact, each and every student has different cognitive abilities (Gardner, 2004). Consequently, they do not process the information that they gain in the same way (Mahmoud Mohammad Sayed Abdallah, 2008).

In conventional instruction, teachers tend to treat students as a homogeneous

group, presenting the same exercises to all students, and expecting the same outcomes from the students within similar time limits (Currie, 2003). Most of the time, students are expected to absorb the presented knowledge using verbal-linguistic and logical-mathematical analysis (Currie, 2003). Ordinarily, teachers tend to present curriculum content using a limited methodology and the acquisition of that knowledge is evaluated by means of standardized tests, whereby the best grades are awarded to students who demonstrate the greatest ability in attempting the examination questions (Currie, 2003).

In fact, for years students are required to only use their verbal-linguistic intelligence and logical-mathematical intelligence when dealing with knowledge acquisition or language learning, as such intelligences are most often associated with academic accomplishment and are the primary elements of general intelligence, or collectively known as *g* (Shearer, 2009). This phenomenon is evident in Malaysian education system. Definitely, it may work fine for the students who walk into classroom with a natural verbal-linguistic and logical-mathematical strength. However, it may fail for those who need to rely on other strengths to master the world of knowledge acquisition, as well as language learning.

The so-called standardized achievement tests, which are commonly used for assessment in the education system tend to emphasize on verbal-linguistic intelligence and logical-mathematical intelligence only (Mcmahon & Rose, 2004; Wei & Tajularipin, 2009). Certainly, the tests become a barrier to success for low achievers or those, who are slower to make academic achievement (VanAuker-Ergle, 2003). Even though many of them own different talents in various fields, such as story-telling, singing, or painting, they are typically marked with a poor image as "academic failure". Such students, who fail to demonstrate the traditional academic intelligences, have low self-esteem and eventually their strengths remain unrealized and it is a lost to both the school and society at large (Campbell, Campbell, & Dickinson, 2003). Therefore, how these students are taught and how the learning environment is guided by the classroom teacher is very important (VanAuker-Ergle, 2003). Accordingly, the application of multiple intelligences teaching approach, that is guided by Gardner's (2004) theory of multiple intelligences in classroom instruction, may help alleviate the problems in teaching heterogeneous students in Malaysian secondary schools.

RESEARCH OBJECTIVES

Hence, a qualitative study was conducted to look at the teachers' instructional practices particularly in employing multiple intelligences theory, the insights given by Gardner (2004), in classroom instruction. The main objective was to explore the application of multiple intelligences teaching approach in classroom instruction based on the POMAT model. The important aspects being explored included the application of multiple intelligences in instructional procedure, instructional

objective, instructional material, classroom assessment and instructional technology.

MULTIPLE INTELLIGENCES IN CLASSROOM INSTRUCTION

All students are individuals with unique patterns of strengths and weaknesses. They differ greatly in cognitive abilities (Gardner, 2004). Some students learn complex concepts and skills quickly and easily, whereas others have to struggle even to master basic concepts and skills. The idea that people vary in cognitive abilities, particularly intelligence, has been discussed for a long time.

The earliest theories about the nature of intelligence include one or more of the following three components: (1) the capacity to learn; (2) the total knowledge a person has acquired; and (3) the ability to adapt successfully to new situations and to the environment in general (Santrock, 2008). Traditionally, the concept of intelligence refers to the problem solving skills and the ability to adapt and learn from one's everyday experiences (Santrock, 2008). However, intelligence is an abstract, broad concept, which has generated a controversy and heated debate (Birney *et al*., 2005; Steinberg, 2006). Thus, it is not surprising that there are many different ways to define it.

Since intelligence is a very broad concept; psychologists argued the structure of intelligence either it is a general ability or a number of specific abilities (Santrock, 2008). Some psychologists, such as Binet and Stern, focus on the concept of general intelligence, which Stern calls intelligence quotient or collectively known as IQ (Santrock, 2008). Wechsler (1958) believes that intelligence is a person's general, verbal and performance intelligences. His view was developed from the ideas of Spearman (1927) who claims that people have both, general intelligence, which is called *g*, and a specific type of intelligence, which he calls *s*.

Others define intelligence as a number of specific intelligences, as proposed by Thurstone (1938). According to Thurstone (1938), people have seven specific abilities which he calls primary abilities, including: (1) verbal comprehension; (2) number ability; (3) word fluency; (4) spatial visualization; (5) associative memory; (6) reasoning; and (7) perceptual speed. Thurstone's view suggests that the present classrooms are full of students with different abilities or intelligences.

Quite recently, an increasing number of studies are looking at specific types of intelligence (Gregory, 2007). Sternberg (2002) has introduced the triarchic theory of intelligence, which proposes that intelligence comes in three different forms, that are: (1) analytical; (2) creative; and (3) practical. Analytical intelligence involves the ability to analyze, judge, evaluate, compare, and contrast. Creative intelligence consists of the ability to create, design, invent, originate, and imagine. Practical intelligence focuses on the ability to use, apply, implement, and put knowledge into practice.

Some psychologists like Gardner regard intelligence as several separate mental abilities. Instead of viewing human intelligence in term of score in a standardized test, Gardner defines intelligence as: (1) the ability to solve problem that one encounters in real life; (2) the ability to generate new problems to solve; and (3) the ability to make something or offer a service that is valued within one's culture (Campbell *et al*., 2003). Gardner (2004) claims that there are at least eight different abilities or intelligences which are relatively independent of one another. Gardner's perspective suggests that most, and quite possibly all students, may be quite intelligent in one way or another. Obviously, some students may show exceptional promise in language, others may be talented in music, and still others may be able to learn mathematics more easily than their classmates.

Gardner has proposed a much broader view of the definition of intelligence than a number of other theorists with his theory of multiple intelligences in *Frames of Mind*. He originally identified seven core intelligences, which included verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinaesthetic, musical-rhythmic, interpersonal and intrapersonal (Gardner, 2004). Later, he added naturalist intelligence in his list during the symposium "MIND 97" (Multiple Intelligences New Directions) in 1997 (Gardner, 2004).

School curriculums at all levels of learning have traditionally focused on only logical-mathematical intelligence and verbal-linguistic intelligence (Abdulkader *et al*., 2009). Therefore, schools teach the students who have strong language and logical thinking skills more effectively. In order to ensure that other students are not left behind, Gardner (2006) suggests that educational methods should be created and adjusted to be more flexible for students who have different intellectual capacities and they should also be redesigned as well as rearranged to use the multiple intelligences effectively so that those changes will benefit students, teachers and society.

Armstrong (2009) has listed four points to display the key ideas of Gardner's multiple intelligences theory which are relevant to school students. First, each student possesses capacities in all intelligences. Most students, however, appear to possess some highly developed intelligences, as well as some weak ones. Second, most students have the capacity to develop each intelligence to an adequate level of competency. The combination of the environmental influences, such as school instruction, parents, and exposure to cultural activities, can strengthen or weaken certain intelligences. Third, intelligences usually work together in complex ways. No intelligence works alone because they always interact with each other. Fourth, there are many ways to be intelligent within each category. In other words, a student can perform a kind of intelligence in different ways.

Based on Gardner's theory, Chapman and Freeman (1996) have stated that there are three implications that are useful for this study. Firstly, intelligence can be taught

or at least enhanced through instruction. Secondly, intelligences are changing throughout life. Thirdly, the existence of different intelligences that different students possess results in different learning styles and different needs. In this regard, it is evident that teachers can develop students' intelligences through instruction by using various instructional styles, instructional strategies and materials. Gardner (2006) has also reminded teachers that during a teaching and learning episode, it is normal for a number of intelligences to be used together.

Chapman and Belancca (1993) have also suggested several implications of Gardner's theory of multiple intelligences which are relevant to all school teachers. The implications are: (1) every student has at least an intelligence of strength; (2) every student has some weaker intelligence that can cause discomfort; (3) students' weaknesses can be strengthened; and (4) a student's brain is as unique as a fingerprint. This suggests that teachers need to ensure that their classrooms, instructional practices and programmes take account of students' different intelligences and learning styles and needs, associated with each. In this way, the particular and the different strengths of students can be accommodated and weaker intelligences can be reinforced.

Multiple intelligences teaching approach offers a wide variety of instructional strategies that can be implemented in the classroom to support the existing ones (Hatmanto, 2004; Lazear, 2004). Besides, multiple intelligences teaching approach provides an opportunity for teachers to reach every student and to offer chances for them to learn and show their comprehension of the curriculum content in various modes (Sayed Abdallah, 2008). It allows a framework for teachers to reflect on their best instructional methods and to understand why these methods work. It also assists teachers to expand their teaching repertoire to include a broader range of methods, materials, and techniques for reaching an ever-wider and more diverse range of students (Hatmanto, 2004). What is more, in a multiple intelligences classroom, students learn best through their areas of smartness or intelligences.

In many ways, the lessons which are designed to incorporate multiple intelligences do meet the needs of various learning styles (Rosen, 1997) and adapting any instructional strategies that meet students' diverse learning styles can improve students' motivation in learning (Wehrwein *et al*., 2007). Furthermore, teaching through intelligences has been found to increase interest and achievement in classroom assessment even for those with learning disabilities and underachievers (Abdulkader *et al*., 2009; Geimer *et al.,* 2000; Greenhawk, 1997; Kornhaber *et al.,* 2003). As far as language learning is concerned, the implementation of multiple intelligences teaching approach in the classroom has a positive effect on increasing reading self-efficacy and improving reading skills (Abdulkader *et al*., 2009). Besides, most of the instructional activities based on multiple intelligences theory have

positive effects on students and teachers and improved classroom environment (Saban, 2000; Yilmaz & Fer, 2003).

POMAT MODEL IN CLASSROOM INSTRUCTION

POMAT model, a procedural approach to apply multiple intelligences in lesson components, was proposed by Mckenzie (2005) to make it easier for teachers to move from theory of multiple intelligences to classroom practice. One of the advantages of analysing the lesson using the POMAT model is teachers can ensure that the whole unit of the lesson caters all core intelligences that eventually cater differing needs and abilities of all students in the classroom.

In the POMAT model, instructional strategy is given due consideration to ensure that the instruction is effective. In this regard, multiple intelligences teaching approach provides teachers an opportunity to teach in a variety of ways and reach students all the way regardless of their different abilities and interests (Shearer, 2009). The model also emphasizes on writing a clear educational objective as proposed in the new version of Bloom's taxonomy of educational objectives for cognitive domain (Anderson & Krathwohl, 2001). Teachers have to set specific objectives based on the learning outcomes so that they can easily identify the most appropriate intelligences to be employed in the lesson and refer to them to make sure that they are on the right track as they plan for the rest of the lesson.

Designing and using instructional materials that meet the needs and abilities of diverse students is very important in the POMAT model. Thus, teachers should not solely rely on textbooks. Designing such materials is critical as it is the interaction of the students with those materials that generates and reinforces actual learning (Smaldino *et al*., 2008). If the materials are weak, improperly structured, or sequenced in a poor manner, limited learning will occur (Smaldino *et al*., 2008). Powerful, well-designed instructional materials that are created, integrated, and presented in a good manner, allow students to have effective and meaningful learning (Smaldino *et al*., 2008). In order to design such materials, teachers should refer to the conceptual selection and evaluation guidelines for instructional materials, that cover five main criteria, namely instruction adequacy, technical adequacy, curriculum adequacy, cost effectiveness, and cosmetic adequacy (Ministry of Education, 1997).

In fact the acquisition of knowledge is not simply evaluated by means of standardized tests which tend to emphasize on only verbal-linguistic intelligence and logical-mathematical intelligence (Mcmahon & Rose, 2004; Wei & Tajularipin, 2009). In this regard, for the students of strong verbal-linguistic intelligence and logical-mathematical intelligence, such assessment is not a drawback to them as they can learn and understand curriculum content very well. On the other hand, it becomes a barrier to success for students of low achievers or students who are slower to make academic achievement (VanAuker-Ergle, 2003). Therefore, many students

who fail to demonstrate the traditional academic intelligences have low esteem and their strengths remain unrealized and it is a loss to both the school and society at large (Campbell *et al*., 2003).

The model also gives emphasis to integrating technology into classroom instruction. Though many teachers know that instructional technology can be an asset to engage students in language learning as well as provide diverse learning experiences to various students, the use of technology, particularly computer for educational purposes, still remains at a low level (Wan Zah, 2008). In this regard, the use of computer in schools is still at a minimum level, whereby textbooks and handouts prepared by teachers are still the primary sources used in classroom instruction (Wan Zah, 2008). Additionally, adapted and specifically designed technology and media can instruct all students effectively and help them achieve at their highest potential regardless of their innate abilities (Smaldino *et al*., 2008). In fact, there are several ways in which technology can be used to enhance learning among students (Smaldino *et al*., 2008) and improve their language skills, particularly reading ability (Ybarra & Green, 2003). What is more, teaching with technology has been found to improve vocabulary, fluency, comprehension, writing and grammar skills (Case & Truscott, 1999; Lewis, 1997; Ybarra & Green, 2003). After all, lessons, which are designed to incorporate technology, do meet the needs of various learning styles of the students (Rosen, 1997) and lessons that take account of students' learning styles can improve students' motivation in learning (Wehrwein *et al*., 2007).

METHODOLOGY

This study aimed to explore how far the teachers in some schools in Temerloh, Pahang, have applied multiple intelligences teaching approach in classroom instruction based on the POMAT model. This led itself to initially a qualitative study as the research was conducted in real and natural background, that is the present English classrooms, and the researcher was the primary instrument in collecting data which are largely in the form of words or graphics, analysing them inductively, concentrating to meanings held by the informants and describing them in an expressive and interesting language (Othman, 2007).

The primary research method is participant observation (Othman, 2007). In this context, the data are collected by observing the informants directly in their classrooms and talking to them personally. In any qualitative study, a sample which is chosen for particular purposes will generate possible various perspectives and opinions on the same matter in a social phenomenon, that could be presented in data (Othman, 2007). Therefore, the researcher used purposive sampling as the research was meant to study a particular sample of persons or documents because of the sample's usefulness (Best & Khan, 2006). The samples were chosen from various schools, races and teaching experiences so that the researcher would be able to

collect data from various perspectives and dimensions. The sampling was aimed at obtaining insights into a phenomenon, and not empirical generalization from a sample to a population (Best & Khan, 2006).

Subject

Initially, the researcher identified six English teachers who were teaching form two students at four daily secondary schools in Temerloh, Pahang, to be the informants for the study. The selected schools were located at rural and urban areas. The subjects were chosen because they had given their informed consent to take part in this study as informants. The subjects comprised of two male teachers and four female teachers. In term of racial background, they comprised of four Malay teachers, one Chinese and one Indian. Besides, they came from various teaching experiences which ranged from 1 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, 21 to 25, and 26 years and above. Each informant represented one category.

The researcher's method was to observe and listen attentively, and to record as faithfully as possible all pertinent information (Mertler & Charles, 2005). Meanwhile, observational data were recorded in video camera and later transferred to field notes and POMAT chart. Initially, informants' approval was sought before the researcher could use video camera for the purpose of recording the classroom instruction. The video recording helped the researcher to gain as much information as possible. After having done all the observations, the researcher interviewed the informants (upon their consent) regarding how far they had applied multiple intelligences in instructional procedure, objective, material, assessment and technology in their classroom instruction. In order to avoid the possibility that the subjects would make extra efforts to help the researcher achieved the aim of the study, they were not told about the focus of the study. This minimizes the impact of the so-called Hawthorne effect, which occurs when subjects are pleased at being included in a study, and unconsciously deceive themselves and the researcher to ensure its success.

Classroom Observation

For this study, the researcher used three strategies, namely, classroom observation, semi-structured in-depth interview and document analysis, for the purpose of collecting the data. An observation was also used to discover complex interaction in a real social background (Othman, 2007). An observational record is referred to as a field note that is a comprehensive, non-judgmental, and concrete description of what has been observed (Othman, 2007). Then, the purpose of observational data in the current study was to describe the setting that was being observed, the activities that took place in the setting, the people who participated in those activities, and the meanings of what was being observed from the perspective of those who observed (Patton, 2002). Observation is considered as the best technique when activities, events or situations need to be observed directly (Othman, 2007). Therefore, the

researcher decided to use observation in the study, so that the researcher could directly observe the teachers' applications of multiple intelligences in instructional procedure, objective, material, assessment and technology in their real classroom setting. The observation was conducted in the normal classroom setting or media room for approximately 80 minutes. The teachers were asked to suggest a convenient time for the observation and the least disruptive to their classroom atmosphere. The teachers were also asked to choose one class that they felt would give full cooperation during the observations. The researcher spent approximately 10 to 15 minutes in the classroom prior to the first formal observation time in order for the students to become familiar with her presence. The students were told that the researcher was there to observe their teachers.

The observations were done for five times for every informant to acquire 30 classroom observations for the study. During the 80-minute formal evaluation, every attempt was made to observe the teachers without letting them know that they were being observed regarding the application of multiple intelligences teaching approach based on the POMAT model. The observational data were transferred to field notes and POMAT charts using MSWord programme. Initially, the researcher recorded the observed phenomena using video camera. This was done to help the researcher getting saturated data from the observations. Then, the recorded data were transferred to Window Media Player programme in movie clip type. The verbal data were immediately and manually transcribed upon the conclusion of each observation in MSWord programme to be recorded as field notes. Following the transcription, the informants were given a copy of the observational notes and the POMAT charts to validate them.

Semi-Structured In-Depth Interview

Qualitative data were also collected from teachers' in-depth semi-structured interviews. An interview is a conversation with a purpose (Othman, 2007). A qualitative interview is a mean for the researcher to access the perspectives of the informants who were being interviewed (VanAuker-Ergle, 2003). Thus, the interview allowed the researcher to have a face-to-face interaction with the teachers to enter into their perspective and to get specific information that would be useful for the study. The quality of the data was rooted in the researcher's accurate interpretation and understanding of the informants' words (VanAuker-Ergle, 2003). Thus, it was necessary for the researcher to frequently ask for clarification or expansion of the informants' responses in order to gain an accurate understanding (VanAuker-Ergle, 2003). These on-going response inquiries could reduce personal bias and the perspectives held by the researcher in the data collection.

Prior to this, an interview guide was prepared by the researcher. The interview guide outlined a set of questions that were to be explored with each informant

before interviewing began. The researcher developed the questions and sequenced those questions. Then, it was referred to the Supervisory Committee members to make decisions about which information to pursue in greater depth. After a few corrections, it was endorsed by the Chairman. For the purpose of the study, the interview guide consisted of two parts of questions. The first part consisted of eleven open-ended questions. This was meant to answer the first research question that emphasized on the application of multiple intelligences in instructional procedure for reading comprehension lesson. The second part of the question comprised of five open-ended questions. It was meant to answer the second, third, fourth and fifth research questions that stressed on the application of multiple intelligences in instructional objective, instructional material, classroom assessment and instructional technology for reading comprehension lesson.

The interview guide was prepared to serve as a basic checklist during the interview so as to make sure that common information would be obtained from the informants by covering the same material (Patton, 2002). The researcher adapted both the wording and the sequence of questions to specific informants in the context of the actual interview. In this regard, the researcher was free to build a conversation within a particular subject area, to word questions spontaneously, and to establish a conversational style but with the focus on the particular subject that had been predetermined (Patton, 2002). An advantage of having interview guide was that it made sure that the researcher fully used the limited time available in an interview situation (Patton, 2002). Besides, the interview guide helped the researcher to make interviewing across a number of different teachers more systematic and comprehensive by delimiting in advance the issues to be explored (Patton, 2002). After all, it kept the interactions focused but at the same time allowed individual perspectives and experiences to emerge (Patton, 2002).

The interviews were conducted once with each respondent immediately after all the five classroom observations were done. It took place in the school at the teachers' time and place of convenience. The length of the interview varied but on average, each lasted one to one and half hour. At the beginning, the researcher planned to have five interviews with each respondent, but once it was done and the data were analysed, the researcher concluded that the data were saturated to manifest the phenomenon of interest.

Document Analysis

The qualitative data were also collected from the document analysis. In this documentary analysis, the following were used as the sources of data: POMAT chart, lesson plan as written in teaching preparation record book, instructional material used for the lessons and multiple intelligences inventory. The document analysis serves as a useful mean in yielding information helpful in evaluating or explaining the observed phenomena (Best & Khan, 2006). In this study, the POMAT chart was used to note

the lessons carried out by the teachers. The chart had been adopted from the actual Mckenzie's (2005) POMAT chart. The chart categorizes the lesson into five components, namely, procedure, objective, material, assessment, and technology. The five lesson components were matched to any of eight intelligences listed by Gardner (2004). Concisely, the chart was designed in a table format. The list of multiple intelligences was set vertically and the lesson components were set horizontally. It was used as one of the observational notes to record the procedure, objective, material, assessment, and technology in classroom instruction. At the same time, it also recorded the multiple intelligences that were being applied in the lessons. Using the chart, the researcher was able to identify familiar and sound multiple intelligences being applied in the lessons. The tendency of integrating intended intelligences in the overall lesson ranged from 1 to 5 times, based on five classroom observations: 5 times indicates always, 4 times often, 3 times sometimes, 2 times seldom, and once very rarely.

The researcher also referred to the teachers' lesson plans as stated in teachers' teaching preparation record book to note distinguished instructional procedure, objective, material, assessment and technology being planned for the lesson. The researcher also kept a copy of the lesson plans and instructional materials upon the teachers' approval. The data from the lesson plans and instructional materials were then transferred to the POMAT chart before it was endorsed by the teachers.

The multiple intelligences inventory for teachers, developed by Tajularipin *et al.* (2010) from Universiti Putra Malaysia, was distributed to all the informants. The inventory was chosen due to the fact that it was adapted and set up based on Malaysian social and educational environment. Furthermore, the inventory had been tested for its reliability using Cronbach's Alpha analysis and has widely been used in many studies related to multiple intelligences in primary and secondary schools all over Malaysia. In particular, it was used to provide information regarding teachers' multiple intelligences profile and personal instructional style. The inventory consisted of three sections. Section A included the subjects' demography, while section B assessed the subjects' multiple intelligences, and section C evaluated the subjects' instructional styles based on MI. Section A comprised of two parts; the school information and teacher information. In the school information, the subjects were required to note their schools and their location. In the teacher information, the subjects recorded their age, gender, race, major teaching subject, teaching experiences and academic qualification.

Section B consisted of 48 items. All the items assessed subjects' multiple intelligences using 5-point Likert scale format ranging from 1 to 5. Code 1 implied never, code 2 seldom, 3 sometimes, 4 often, and 5 always. The subjects only circled one relevant number for each item. The section had eight constructs: visual-spatial intelligence (item 1 to 6),

verbal-linguistic intelligence (item 7 to 12), naturalist intelligence (item 13 to 18), logical-mathematical (item 19 to 24), intrapersonal intelligence (item 25 to 30), interpersonal intelligence (item 31 to 36), musical-rhythmic intelligence (item 37 to 42, and bodily-kinaesthetic intelligence (item 43 to 48). The Cronbach Alpha coefficient for the overall items was 0.91. Statistical analysis was done manually. The researcher added up relevant scores for each construct. The teachers' intelligence was classified into three levels. A total score of 6 to 13 indicated weak level, the score of 14 to 21 showed average level and the score of 22 to 30 showed strong level. Based on the highest score, the researcher could identify the teachers' intelligence profile dominance.

Section C also comprised of 48 items which assessed the subjects' instructional styles using the 5-point Likert scale format ranging from 1 to 5. Code 1 implied never, code 2 seldom, 3 sometimes, 4 often, and 5 always. The subjects circled one relevant number for each item. The section had eight constructs: instructional styles based on verbal-linguistic intelligence (items 1 to 6), instructional styles based on logical-mathematical intelligence (items 7 to 12), instructional styles based on bodily-kinaesthetic intelligence (items 13 to 18), instructional styles based on visual-spatial intelligence (items 19 to 24), instructional styles based on interpersonal intelligence (items 25 to 30), instructional styles based on naturalist (items 31 to 36), instructional styles based on intrapersonal intelligence (items 37 to 42), and instructional styles based on musical-rhythmic intelligence (items 43 to 48). The Cronbach Alpha coefficient for the overall items was 0.87. Similarly, the statistical analysis was done manually. The researcher summed up the relevant scores for each construct and calculated the mean. A total mean score of 1.00 to 1.99 indicated very rare, the mean score of 2.00 to 2.99 seldom, 3.00 to 3.99 sometimes, 4.00 to 4.99 often and 5.00 always. By referring to the highest mean score, the researcher could detect the teachers' dominant instructional styles based on MI.

Data Analysis Management

The collected data were arranged in a form of movie clip, audio clip, observational note, lesson plan, instructional material and chart. In order to understand such enormous and disorganized data, the researcher had adapted a simple data management system from Malakolunthu (2001). The data management comprised of three basic tasks that were cleaning data, understanding data, and categorizing data (refer to Fig.1).

As the first step of cleaning the data, the researcher transferred the recorded data from video camera to computer using Window Media Player. The data included five classroom observations from each informant. After transferring the data to the computer, every movie clip was put an index. Coding was done by giving a unique code to each school and informant. Coding system is very important to ease the researcher to get back to the raw data and triangulate them during the writing

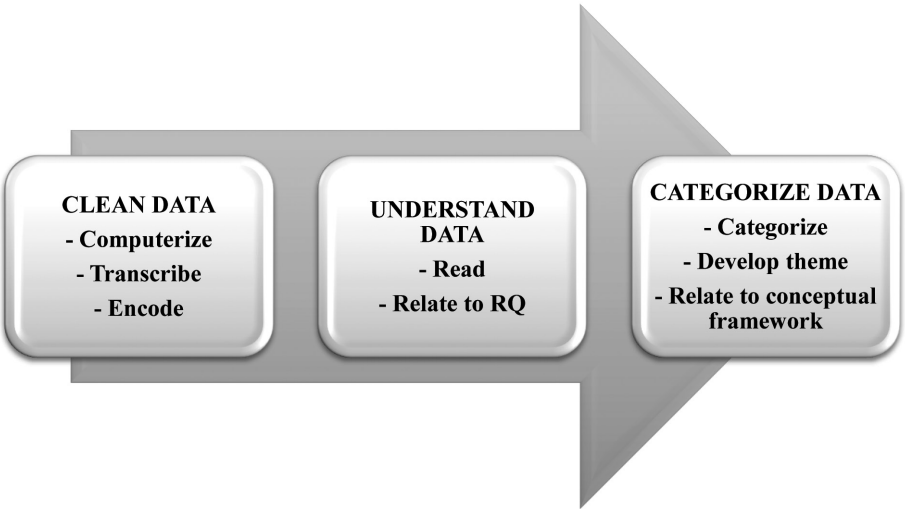

Fig.1 Data Analysis Management

process (Malakolunthu, 2001). One of the codes that the researcher used for movie clip was SSAZCO010904 (1). In this sample, "SS" referred to name of the school, "AZ" referred to name of the teacher, "CO" referred to classroom observation, "01" referred to the first classroom observation, "09" referred to the date of the observation, "04" referred to the month of the observation and "(1)" referred to the first movie clip for the first classroom observation. Next, the researcher transcribed the movie clip to serve as observational notes using MSWord. At the same time, the researcher put an index to each observational note. One of the codes that the researcher used in the study was SSAZCO010904. In this sample, "SS" referred to name of the school, "AZ" referred to name of the teacher, "CO" referred to classroom observation, "01" referred to the first classroom observation, "09" referred to the date of the observation and "04" referred to the month of the observation. The same procedure was done to the interview data and the research documents.

The second step was to understand the collected and coded data. In the process of understanding the data, the researcher concentrated on what the data revealed and how these could answer the researcher's research questions. As for the first step in the process of analysing the data, the researcher read the transcript a few times. Initially, the researcher mentally prepared the main research questions and sub-questions to help the researcher to be focused. While reading, the researcher tried to identify any research questions that could be related to the data. Then, the researcher wrote the question number to the relevant data.

The next step was to categorize the collected data according to specific categories and themes. An approach that always compares and analyses the data during a research can develop new category and theme (Malakolunthu, 2001). Therefore,

the researcher frequently compared and analysed the data to identify specific category and theme that eventually led the researcher to get different perspectives from various informants. Finally, the researcher tried to relate the data to the conceptual framework.

Data Analysis

For the data analysis, each recorded verbal interaction was transcribed manually. The written data was read line by line, analysed and reanalysed for emerging similar data concepts. These similar content areas were then grouped into categories. Once the information was grouped under similar content categories, it was re-examined for broader thematic content. The observational data transcripts were also analysed in the same manner as the interview transcripts. In order to verify and validate the qualitative analysis, a kind of triangulation known as the triangulation of qualitative data sources was used (Othman, 2007; Patton, 2002). Triangulating data sources means comparing observational data with interview data, and validating information obtained through interviews by checking documents and other written evidence that can corroborate with what the informants report (Patton, 2002). In the study, data triangulation analysis was used to justify how far the teachers had applied multiple intelligences in procedure, objective, material, assessment and technology in classroom instruction.

At a later point in the analysis, the data were compared and cross-checked for consistency of information, emerged at different times and by different means within qualitative methods (Patton, 2002). This is done to ensure its reliability as in qualitative study the concept of reliability is associated with dependability and consistency of the results or findings from collected data (Othman, 2007). However, the researcher was well aware that triangulation of data sources within qualitative methods would seldom lead to a single, totally consistent picture. The fact that observational data produce different results than the interview data does not mean that either or both kinds of data are invalid (Patton, 2002). In this regard, different kinds of data captured different things and for this reason, the researcher made an attempt to understand the reasons for the differences. At the same time, consistency in the overall pattern of the data from different sources and reasonable explanations for the differences in the data from divergent sources contribute significantly to the overall credibility of the findings (Patton, 2002). Fig.2 summarizes the framework of the study.

RESEARCH FINDINGS

The research findings were extracted mainly from classroom observations on six English teachers as primary data source. Other primary data sources were gained from the semi-structured in-depth interviews with the teachers and the document analysis which was also a triangulation strategy for collecting qualitative data. The data were analysed manually. The themes or issues from the findings were reported in narrative form and interview verbatim to give clear

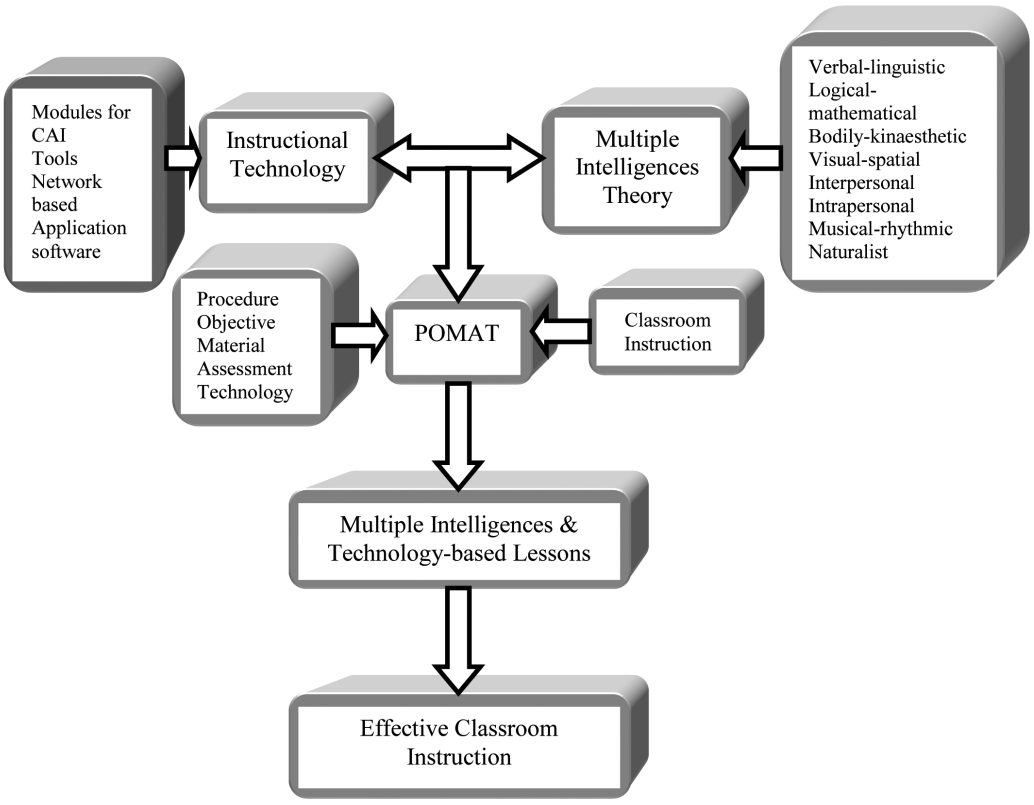

Fig.2 Research Framework

picture of the phenomena. The themes emerged from the research findings were discussed precisely in order to answer the research questions.

Application of Multiple Intelligences in Instructional Procedure

The POMAT model allowed the researcher to investigate how far the teachers had applied multiple intelligences in instructional procedure, objective, material, assessment and technology. Generally, the instructional procedure was rooted in the instructional strategy and the activities that the teachers had designed for their classroom instruction. All the teachers had their own instructional strategy to create effective classroom instruction. As illustrated in Table 1, three themes related to the application of multiple intelligences that were commonly employed in instructional procedure were: (1) instructional strategy based on verbal-linguistic intelligence; (2) instructional strategy based on interpersonal intelligence; and (3) instructional strategy based on bodily-kinaesthetic intelligence.

The research findings showed that the teachers adopted instructional strategy based on verbal-linguistic intelligence such as conducting story-telling, impromptu speaking, reading aloud, verbal lecture, classroom discussion, interview, reading

TABLE 1
Multiple Intelligences in Instructional Procedure

INTE	ADAM					BADLI					NORIN					ALIA					REKHA					TAN				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
V-L	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
L-M	✓	✓	✓	✓	✓				✓				✓						✓		✓				✓	✓		✓	✓	✓
V-S	✓	✓	✓	✓		✓						✓	✓								✓	✓	✓	✓	✓			✓	✓	✓
M-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INTE	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
INTR			✓		✓																✓	✓	✓	✓				✓		✓
B-K	✓		✓					✓	✓		✓	✓	✓	✓	✓	✓		✓		✓	✓		✓	✓	✓	✓			✓	✓
NAT	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓						✓			

TABLE 2
Multiple Intelligences in Instructional Objective

INTE	ADAM					BADLI					NORIN					ALIA					REKHA					TAN				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
V-L	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
L-M	✓												✓						✓									✓	✓	
V-S																								✓	✓			✓	✓	✓
M-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INTE					✓		✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	
INTR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-K																							✓		✓	✓			✓	
NAT	✓	✓	✓													✓					✓						✓			

comprehension and writing. In this context, the designed instructional strategy was intended to accommodate and reinforce verbal linguistic intelligence among the students. The sub-theme that emerged from the theme of instructional strategy based on verbal-linguistic intelligence was the (1) use of elaboration. Elaboration was widely used by all of the informants for their classroom instruction. The purposes of using elaboration included to: (a) have a better understanding; (b) give input; and (c) meet examination requirement. Some teachers used elaboration in classroom instruction to let the students attain a better understanding of what was being taught. This was explained by Mr Badli, Miss Norin and Mdm. Alia stated the following:

> "In order to get them understand what we are teaching we have to elaborate. Sometimes using body language, facial expression then they could understand."

> "I always use explanation, elaboration so that students can have better understanding."

> "I often use elaboration or explanation. If it is a new lesson I will start with questioning students."

Elaboration was also used to give some inputs to the students in particular when a topic or theme is still new to the students. This was explained by Mdm. Rekha, as follows:

> "Pertaining to the activities you are preparing or the skill you are going to teach if this group needs a lot of explanation I have to give a lot of explanations, input. Maybe when I move to next topic or next theme I could see I don't think I really need a lot of explanations as they have learnt much earlier through experience or whatsoever. So, I don't need the explanation. Not to say that I have to give explanation and details for each and every topic."

The use of elaboration is also meant as a practice for the students to always give details to their points. This is because the elaboration could make their points clear. The purpose was explained by Mdm. Tan, as follows:

> "I use a lot of elaboration and explanation because I think our examination system like in paper one, writing they need a lot of elaboration. And normally students cannot do this part. They just know how to state their points and then you ask them to further explain they cannot. So, that's why I have to do this in class to show as an example that you have said something you have to elaborate to make your point clear. So, I try to do that as often as possible."

The findings also revealed that the teachers utilized instructional strategies which stressed on interpersonal intelligence such as giving feedback, cooperative learning, person-to-person communication, problem solving, group discussion and group project. In this regard, the designed instructional strategy is intended to accommodate and reinforce interpersonal intelligence among the students. The sub-themes that had been identified based on the theme of instructional strategy based on interpersonal intelligence were: (1) the use of group work, and (2) the use of discussion. The teachers used group work as one of the instructional strategies as it helped the students completed the task given easily, especially when there was a mix of academically weak and good students in the class. The purpose of using group work was to (a) assist weaker students. Most of the teachers used group work with the intention that the good students in the class would assist the weaker students so that nobody was left behind in the discussion. This was emphasized by Miss Norin, Mdm. Alia, Mdm. Rekha and Mdm. Tan, as follows:

> "I always use discussion and group work. For me good students can assist weaker students through discussion or group work. When I group them I will make sure that one of the good students be in a group of different abilities. Because I think the good students will help weak students to be together in the discussion so that they won't be left behind."

"Usually I go to class divided them into groups of five and gave them a topic. Usually I do it when I want them to discuss about an issue."

"The groups are set up depends on the task that I am going to give. If we need for example this task mainly for advanced level students I will ask advanced learners to sit together in the sense that all advanced learners will be doing it. Let say the activity is for the whole class I will fix them. So, one person will be the junior teacher and the rest of them will do discussing."

"Like for me normally I do a lot of group work because the class is very big. So I divide them into a group of 6 to 7 students. And hopefully, I mean in this group there will be some students with different intelligences. So, some of the good ones would be able to help the weaker ones. They may be good in certain different areas. Some of them are academically inclined. So, they would be able to help the weaker ones when they come to do writing and understanding things. Some students in the group are good in organizing things and some of them are good in drawing. So, in this group we hope that students of different intelligences would come together to complete a piece of work."

However, some teachers found that the use of group work was not relevant to their weak students. The reasons why it did not work was explained by Mr Badli and Mdm. Alia, as follows:

> "If I go to a good class, it's very easy for me to set them up in groups to do some work. If I go to a weak class I don't think it works very well because they need teacher to guide them. Even every single word they didn't know they will ask me. I don't think it works."

> "Group activity can be very helpful for certain classes but not for the last classes. It is quite difficult to handle them because they like to chit-chat, go beyond the topic. If it is a very large class it is very troublesome."

Besides, most of the teachers used discussion, i.e., either peer discussion or class discussion, in the classroom. The reasons why they had used this strategy was explained by Mr Adam, Miss Norin and Mdm. Rekha, as follows:

> "Most of the time I use discussion between teacher and students. It is difficult to get the students talk among themselves in English."

> "I always use discussion and group work. For me good students can assist weaker students through discussion or group work."

> "I always use discussions because discussions really give them the chance to give their ideas. We can't really depend on one student's answer. We have to give them a chance to discuss that they actually could discuss. And at the same time they could learn new things. And they could come to a conclusion."

For the theme of instructional strategy based on bodily-kinaesthetic intelligence, the research findings disclosed that the teachers had applied instructional strategy which emphasized on bodily-kinaesthetic intelligence such as conducting role-play, classroom games, exercise break and body language in the classroom. In this context, the designed instructional strategy was intended to accommodate and reinforce bodily-kinaesthetic intelligence among the students. Sub-themes that emerged from the theme of instructional strategy based on bodily-kinaesthetic intelligence were: (1) the use of role-play, and (2) the use of instructional media. Some of the teachers used role-plays, though not very often, to make the teaching and learning episode more interesting and enjoyable. This was mentioned by Mr Adam, Mr Badli and Miss Norin, as follows:

> "I seldom use role-play. It is quite difficult but I use this method especially in dealing with dialogue."

> "I'm not doing so much role-play with the students. But it could be done by me and the students."

> "Sometimes I use role-play. It makes teaching and learning more interesting and enjoyable to have better understanding."

The use of instructional media such as graphic, textbook, LCD projector, CDRI and CD-ROM was intended to generate effective classroom instruction. The teachers used different media to deliver information to the students. This was explained by Mdm. Alia and Mdm. Rekha, as follows:

> "Sometimes if we want to use a computer lab, not all of the computers can be used. It can be a problem for teachers to teach on that day. That's why I resort to textbook because our textbook is just recently being revised. And it is better for us to use the textbook to impart the knowledge that they have in the textbook."

> "Nowadays the world is actually heading towards ICT. So, we have to be a good role model for the students. We have to update ourselves in the sense that we have to show our students that through ICT we can learn many things."

Application of Multiple Intelligences in Instructional Objective

The teachers constructed instructional objective for the lesson based on the learning outcome provided in the syllabus and curriculum specification. As depicted in Table 2, two themes related to the application of multiple intelligences that were frequently employed in instructional objective were: (1) instructional objective based on verbal-linguistic intelligence; and (2) instructional objective based on interpersonal intelligence. The research findings revealed that the teachers were keen to construct instructional objective based on verbal-linguistic intelligence such as stating that the students should be able to read and scan for specific information, answer comprehension questions, acquire a range of vocabulary by changing adjectives given with other appropriate ones, listen to a conversation and understand the main idea, read aloud text with correct intonation, transfer the information from linear to non-linear text, write out a paragraph describing the map and directions given, read a short text and summarize text by listing out the uses of multimedia in learning, list out features of a computer and the advantages of using IT to learn, read linear and non-linear text, and read directions given to four different places. In this context, the objective of the instruction was to accommodate and reinforce verbal-linguistic intelligence among the students.

Concurrently, most of the teachers constructed instructional objective based on interpersonal intelligence such as stating that the students should be able to tell verbally to their friends what the text is about, talk about their friends verbally, share the important ideas, discuss and compare the differences between using books and computer in learning, discuss on how to care for the environment and present answers to

TABLE 3
Multiple Intelligences in Instructional Material

INTE	ADAM					BADLI					NORIN					ALIA					REKHA					TAN				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
V-L	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
L-M		✓	✓																✓							✓				
V-S		✓	✓	✓																	✓		✓	✓	✓			✓	✓	✓
M-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INTE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INTR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NAT	✓	✓	✓													✓					✓						✓			

TABLE 4
Multiple Intelligences in Classroom Assessment

INTE	ADAM					BADLI					NORIN					ALIA					REKHA					TAN				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
V-L	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
L-M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V-S																								✓	✓					✓
M-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INTE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INTR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-K																							✓							
NAT	✓	✓	✓																		✓						✓			

class, discuss meaning of words, convey information in their card to friends in other group, in group sequence the story and read aloud to others. In this regard, the objective of the instruction was to accommodate and reinforce interpersonal intelligence among the students.

Application of Multiple Intelligences in Instructional Material

The teachers created or adapted and presented appropriate instructional material to generate and reinforce learning. As illustrated in Table 3, one theme that emerged from the application of multiple intelligences that was regularly employed in instructional material was: (1) instructional material based on verbal-linguistic intelligence. The research findings verified that the teachers used instructional materials based on verbal linguistic intelligence such as textbooks, hand-outs, books, CDs, writing tools, paper, diaries, dialogue, discussion, debate, and stories most of the time in every classroom instruction. In this context, the material designed is intended to accommodate and reinforce verbal-linguistic intelligence among the students. However, some teachers sometimes liked to add in visual-spatial intelligence-based materials such as video, movies, slides, imaginative games, mazes, puzzles, and pictures in their instruction.

Application of Multiple Intelligences in Classroom Assessment

Classroom assessment is conducted mainly to assess students' comprehension of the topic being discussed. As portrayed in Table 4, one theme that transpired from the application of multiple intelligences that were always employed in classroom assessment was (1) assessment based on verbal-linguistic intelligence. The research findings revealed that the teachers were prone to design classroom assessment based on verbal-linguistic intelligence, such as comprehension question, spelling test, information transfer, crossword puzzle, and summary writing. In this regard, the assessment arranged was intended to accommodate and reinforce verbal-linguistic intelligence among the students. The assessment was designed based on students' achievement level. This was explained by Mr Adam, Mr Badli and Mdm. Tan, as follows:

> "It depends on the students what kind of assessment is suitable for them."
>
> "….I will set up based on their level since they are quite weak."
>
> "So assessment will be actually done to see whether they understand the topic ….."

Meanwhile, the sub-themes that were identified for the theme of assessment based on verbal-linguistic intelligence were: (1) examination-based assessment; and (2) assignment-based assessment. Ordinarily, the assessment item was designed based on the standardized achievement test format. In this context, the assessment item was set

according to the PMR format. This was explained by Mr Badli, Miss Norin and Mdm. Alia, as follows:

> "It is always exam-based assessment. But if for monthly test I will set up based on their level since they are quite weak."

> "Assessment for me is yes the exam."

> "Assessment normally is based on exam format. Usually assessment will be done at the end of a topic. If we do classroom-based assessment it is still based on exam format. Any assessment we have to follow the format."

Some of the teachers assessed students' comprehension based on their assignments. Instead of written assessment, the teachers used other modes of assessment, such as giving feedback and group presentation. This was explained by Miss Norin, Mdm. Rekha and Mdm. Tan, as follows:

> "…But actually I assess the students from their exercises. I assess them verbally. If they managed to do the exercises then they meet the objective."

> "When it comes to the overall assessment I just still prepare activity basically in written form. And the questions will be based on the things that have been done with multiple intelligences. There will be questions on their listening skill. There will be questions based on things that I asked them to explore. Maybe I would ask them to list down what are the things you could see right in front of the canteen for example."

> "…But if per topic it will be based on assignment that I have given to them. And sometimes it is also not in written work because sometimes I give them group presentation, so an assignment based on the topic they are going to present. If they are able to present what has been given to them means that they have actually understood the topic."

Application of Multiple Intelligences in Instructional Technology

The use of appropriate instructional technology may contribute to the effectiveness of classroom instruction as it provides the teachers with the tools that engage students in learning. However, the research findings revealed that the teachers very rarely integrated instructional technology into classroom instruction. This indicated that the teachers hardly used instructional technology to accommodate and to reinforce their students' multiple intelligences. As shown in Table 5, one theme that emerged from the application of multiple intelligences in instructional technology which hindered the teachers from integrating technology into classroom instruction was (1) drawback. The sub-themes that emerged from the theme of

TABLE 5
Multiple Intelligences in Instructional Technology

INTE	ADAM					BADLI					NORIN					ALIA					REKHA					TAN				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
V-L			✓																				✓		✓					
L-M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V-S			✓																				✓		✓					
M-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INTE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INTR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NAT			✓																											

drawback were: (1) time consuming; (2) inefficient lab management; (3) technical problems; and (4) no instructional technology expert. Some of the teachers argued that it was rather time-consuming to prepare technology-based lesson. This was explained by Miss Norin, as follows:

> "I seldom use ICT in teaching. For me the reason is time consuming. It is about preparation. We have to prepare the materials well. So it takes some time for us to prepare."

The teachers also claimed that they rarely used instructional technology due to inefficient lab management. This was explained by Mr Adam as follows:

> "I seldom use ICT this year compared to last year due to lab management problem."

Some technical problems, such as computer breakdown, malfunction of LCD projector, and inadequate computer and LCD projector in all classrooms also restricted the teachers from using instructional technology. This was explained by Miss Norin, as follows:

> "Even though we have LCD projector in class it is not functioning. We must have all the equipment in all classes because if we have it in one particular room it takes some time for the students to move. If each classroom has the LCD it makes the job easier."

Another drawback is that there is no expert in instructional technology in the school. The teachers stated their appreciation to have an expert to help them, particularly in preparing the technology-based lessons. In fact, they were willing to integrate instructional technology into their classroom instruction if they had such officer. This was explained by Mdm. Alia and Miss Norin, as follows:

"Let say if we have an officer to help us in preparing the materials then it can be done."

"Yes, absolutely I will if we have an officer to help out in preparing the materials."

DISCUSSION

Classroom observations verified that the teachers did apply multiple intelligences teaching approach in the classroom even though some of them had least idea about multiple intelligences teaching approach and how to go about it. Apparently, most of the teachers applied multiple intelligences teaching approach intuitively. The observational data coincide with Mckenzie's (2005) opinion that Gardner's theory of multiple intelligences (MI) validates what teachers have already done in the classroom. Mckenzie also claims that most of the time, teachers cater different intelligences in classroom instruction without even knowing that they are applying multiple intelligences teaching approach (Mckenzie, 2005). The researcher concluded that despite of their limited knowledge and exposure to MITA, the teachers had already applied multiple intelligences teaching approach in their classroom instruction though intuitively most of the time.

Observational data also proved that the teachers had integrated two to seven intelligences into a single lesson. The findings are quite consistent with Mckenzie's (2005) suggestion that it is not necessary or even advisable to try to accommodate all the intelligences in any one lesson. Instead, teachers should integrate three to five intelligences into one lesson because to work all intelligences into a single lesson usually results in an unnatural learning environment, whereby students are unable to benefit from saturation of inputs and experiences (Mckenzie, 2005). The researcher concluded that the teachers were on the right track in integrating multiple intelligences into classroom instruction.

The research findings indicated that the teachers were inclined to design instructional procedure based on verbal-linguistic intelligence, interpersonal intelligence and bodily-kinaesthetic intelligence, to construct instructional objective based on verbal-linguistic intelligence and interpersonal intelligence and also create instructional material and classroom assessment based on verbal-linguistic intelligence. Overall, the teachers had the tendency to apply verbal-linguistic intelligence in procedure, objective, material and assessment for classroom instruction. The researcher concluded that it is possible due to the nature of the subject itself which focuses on all language aspects. However, the researcher believes that if the teachers always cater only verbal-linguistic intelligence in the lesson, it will be unfair to low achievers or those students who cannot master the world of language through verbal-linguistic intelligence-based instructional strategies. Thus, the teachers should give such students opportunity to learn language in different modes which they are good at such as curriculum song, pictorial representation and classroom games.

Alternatively, all the teachers very rarely integrated technology into classroom instruction and therefore hardly applied any multiple intelligences in the instructional technology. They argued that it was in fact time-consuming to prepare the technology-based lesson as they had to rush finishing the syllabus to prepare their students for the examinations. The researcher concluded that the nature of the examinations in Malaysia and its impacts on the students and teachers hinder the teachers from integrating instructional technology into their lessons. As for the teachers, preparing a technology-based lesson demands a lot of time and they need that time to cover the syllabus. Consequently, not many teachers are willing to sacrifice their time to prepare technology-based lessons.

Teachers should consider integrating technology into their classroom instruction because the school of the future will be different. In fact, the roles of the teachers and the use of technology must change if the schools are to prepare the students who will contribute to and be successful in a technology-dependent global society (Smaldino *et al*., 2008). The trend for today's teachers is a shift from traditional teaching methods and tools to digital approaches to better meet the needs of students. However, the transition from traditional to digital classroom environments varies greatly from teacher to teacher and school to school. Prensky (2006) describes technology adoption and adaptation in school in four-step processes: (1) dabbling, (2) doing old things in old ways, (3) doing old things in new ways, and (4) doing new things in new ways. The process begins with "dabbling" with technology by randomly adding technology tools to a few classrooms or the media room or the library. Then, technology is used to do "old things in old ways," like teachers displaying lecture notes in MS PowerPoint rather than using overhead transparencies or verbal lectures. The next phase involves doing "old things in new ways", such as students using word processing and clip art rather than notebook paper and hand-drawn pictures to create a short story or hand-outs. The final phase is "doing new things in new ways." It requires each classroom to adopt and adapt its environment with digital tools that support and enhance digital teachers' and students' capabilities. Based on classroom observations, the researcher concluded that the teachers were still either at the first phase or the second phase. This is evident because the teachers could only use instructional technology, particularly computers, in computer lab or media room, plus they only used computer tool to display pictures or notes.

SUMMARY

The findings proved that the teachers did apply multiple intelligences teaching approach in classroom instruction, regardless of their limited knowledge and exposure to multiple intelligences teaching approach or MITA. Meanwhile, classroom observations verified that the teachers accommodated and reinforced two to seven intelligences in a lesson, which is either in

instructional procedure, or instructional objective, or instructional material, or classroom assessment, or instructional technology.

Verbal interactions with the teachers further validated that the teachers were interested to apply multiple intelligences teaching approach and at the same time integrate technology into classroom instruction effectively. They were also well aware that their students had different multiple intelligences profiles and thus required them to individualize the education and approach the curriculum content through multiple entry points. Nonetheless, it was time consuming to prepare multiple intelligences-based lessons and what is more, they had to focus more on the curriculum content rather than curriculum instruction as they had to prepare their students for the examinations.

In addition to the above, the teachers very rarely incorporated instructional technology in their classroom instruction for several reasons. The verbal interactions with the teachers revealed that they were keen to use technology particularly computer tools for their classroom instruction. However, it was time consuming to prepare a technology-based lesson as they were rushing to finish the syllabus. They also argued that some technical problems due to inefficient lab management, computer breakdown, malfunction of LCD projector, and inadequate computer and LCD projector in all classrooms also hindered them from using instructional technology. At the same time, they would really appreciate it if they could have an expert in instructional technology, i.e. a person who would help them particularly in preparing the instructional materials in their school.

CONCLUSION

The research findings corroborated that the teachers need to be encouraged to apply multiple intelligences teaching approach and incorporate instructional technology in their classroom instruction. Multiple intelligences teaching approach not only individualizes the education but also approaches the curriculum content through multiple entry points. This will directly cater for students' differences in intelligences, learning abilities, styles and needs in the present classrooms.

Meanwhile, the POMAT model allows the teachers to consider applying multiple intelligences in instructional procedure, objective, material, assessment and instructional technology. At the same time, it indirectly promotes the teachers to integrate technology into their classroom instruction and eventually inspire them to become techno-constructivists. In fact, the integration of technology into classroom instruction should be enhanced among all teachers. Teachers should be encouraged to become techno-constructivists as they will become role models for their students in making technology as a tool for learning. This will indirectly rectify students' perspective that computer is simply for fun and leisure.

IMPLICATIONS

The implication of this study to educational institutions which offer teacher training programmes such as universities and teacher training institutions is the need to formally expose multiple intelligences teaching approach to trainee teachers, which can be included in pedagogical course. Multiple intelligences teaching approach should also be applied in teacher training programme to let the trainee teachers get used to it. Besides, trainee teachers need to be encouraged to apply multiple intelligence teaching approach during their teaching training as a solution to the problems in teaching heterogeneous students.

Since multiple intelligences teaching approach is in line with KBSM and smart school concept, the Education Ministry of Malaysia needs to come up with some comprehensive guidelines in the form of module or manual for teachers so that they can apply multiple intelligences in procedure, objective, material, assessment and technology for classroom instruction and at the same time, integrate technology into classroom instruction using the POMAT model. This is because the present module of '*Aplikasi Teori Kecerdasan Pelbagai dalam Pengajaran dan Pembelajaran'* (Application of Multiple Intelligences Theory in Teaching and Learning) is still not enough for the teachers to master the strategy. The Education Ministry in particular the Teacher Education Division needs to offer in-service training or short courses for teachers to help them master multiple intelligences teaching approach and design lessons based on the POMAT model. Appreciation should be given to teachers who make an effort to use this teaching strategy as it will promote them to become innovative, creative and techno-constructivist in enhancing classroom instruction in the future.

RECOMMENDATIONS

Based upon the insights gained from the study, it is recommended that teachers vary their instructional strategies used in classroom so that teachers could individualize the education and approach curriculum content through multiple entry points. The strategy applied should not be limited to delivering curriculum content in verbal lecture only to finish the syllabus without taking into consideration different students' multiple intelligences profiles, and presenting instructional materials that focus more on linguistic domain only.

Furthermore, application of multiple intelligences teaching approach in classroom instruction was proven to be able to enhance students' interest, comprehension and test achievement. Meanwhile, the POMAT model is able to guide teachers to prepare a multiple intelligences and technology-based lesson. In particular, the approach could guide teachers to apply multiple intelligences in five critical components of a lesson, namely, procedure, objective, material, assessment and technology. Additionally, the multiple intelligences teaching approach and the POMAT model are in line with KBSM and Smart School concept which value individualizing

education, approaching curriculum content through multiple entry points and integrating technology into classroom instruction that eventually help the educational system achieves the Vision 2020 and National Philosophy of Education.

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